

In The Claims:

Please cancel claims 1, 2, 20-31, and 35 without prejudice or disclaimer and amend the claims as follows:

1. Presently Canceled.
2. Presently Canceled.
3. (Original) A core/shell nanoparticle oligonucleotide conjugate comprising:
 - (a) an inner metal-containing nanoparticle core;
 - (b) an outer non-alloying gold shell surrounding the nanoparticle core; and
 - (c) oligonucleotides attached to the gold shell.
4. (Original) The core/shell nanoparticle of claim 3 wherein the oligonucleotides have a sequence complementary to a portion of a sequence of a target nucleic acid.
5. (Presently Amended) The core/shell nanoparticle of claim[[s 1, 2 or]] 3 wherein the inner metal-containing nanoparticle core comprises silver, Pt, Fe, Co, or Ni.
6. (Presently Amended) The core/shell nanoparticle of claim[[s 1, 2 or]] 3 wherein the inner metallic nanoparticle core comprises an alloy metal comprising FePt or FeAu.
7. (Presently Amended) The core/shell nanoparticle of claim[[s 1, 2 or]] 3 wherein the inner metal-containing nanoparticle core comprises a metal oxide.
8. (Presently Amended) The core/shell nanoparticle of claim[[s 1, 2 or]] 3 wherein the inner metal-containing nanoparticle core is magnetic.

9. (Original) The core/shell nanoparticle of claim 7 wherein the inner metal-containing nanoparticle core comprises Fe₃O₄ or Co₃O₄.

10. (Presently Amended) The core/shell nanoparticle of claim[[s 1, 2 or]] 3 wherein the gold shell ranges from about 0.5 to about 2 monolayers in thickness.

11. (Presently Amended) [[The]]A method for making core/shell nanoparticle [[of claim 3 wherein the]]oligonucleotide[[s]] conjugates [[are attached to the nanoparticles in a stepwise ageing process]] comprising

- (a) providing inner metal-containing nanoparticle cores;
- (b) treating the inner metal-containing nanoparticle cores simultaneously with a solution comprising a gold salt and a solution comprising a reducing agent under conditions that produce a non-alloying gold shell surrounding the nanoparticle cores;
- (c) isolating the core/shell nanoparticles;
- (d)[[(i)]] contacting the oligonucleotides with the isolated core/shell nanoparticles in a first aqueous solution for a period of time sufficient to allow some of the oligonucleotides to bind to the nanoparticles;
- (e)[[(ii)]] adding at least one salt to the aqueous solution to create a second aqueous solution; and
- (f)[[(iii)]] contacting the oligonucleotides and nanoparticles in the second aqueous solution for an additional period of time to enable additional oligonucleotides to bind to the nanoparticles[;].

12. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 11 wherein the oligonucleotides include a moiety comprising a functional group which can bind to a nanoparticle.

13. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 11 wherein all of the salt is added to the water in a single addition.

14. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 11 wherein the salt is added gradually over time.

15. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 11 wherein the salt is selected from the group consisting of sodium chloride, magnesium chloride, potassium chloride, ammonium chloride, sodium acetate, ammonium acetate, a combination of two or more of these salts, one of these salts in a phosphate buffer, and a combination of two or more these salts in a phosphate buffer.

16. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 15 wherein the salt is sodium chloride in a phosphate buffer.

17. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 11 wherein nanoparticle-oligonucleotide conjugates are produced which have the oligonucleotides present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm².

18. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 17 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm².

19. (Presently Amended) The [[core/shell nanoparticle]]method of Claim 18 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm² to about 40 picomoles/cm².

20.-31. Presently Canceled.

32. (Presently Amended) A method of detecting nucleic acid bound to a surface comprising:

- (a) contacting the surface with a solution comprising core/shell nanoparticle oligonucleotide conjugates of claim [[2]]3, wherein the nanoparticle core is magnetic, and wherein the contacting takes

- place under conditions effective to allow hybridization of the core/shell nanoparticle oligonucleotide conjugates with the bound nucleic acid;
- (b) subjecting the nanoparticle conjugate to an external magnetic field so as to accelerate movement of the nanoparticle conjugate to the surface to promote interaction between the nanoparticle conjugate and the nucleic acid;
 - (c) removing from the surface any nanoparticle conjugates that have not hybridized with the nucleic acid; and
 - (d) observing a detectable change brought about by hybridization of the nucleic acid with the nanoparticle conjugates.

33. (Original) The method of claim 32 wherein the core/shell nanoparticle oligonucleotide conjugate comprises Fe₃O₄/gold core/shell nanoparticles.

34. (Original) The method of claim 32 wherein step (c) is performed by rinsing the surface with a wash solution or reversing the magnetic field.

35. Presently Canceled.

36. (New) A core/shell nanoparticle oligonucleotide conjugate made according to the method of claim 11.